

AMENDMENTS TO THE CLAIMS

The present listing of claims replaces all prior versions and listings of claims in the subject patent application.

1. (currently amended): A method for recovering data in a redundant data storage system having a plurality of data storage units, said method comprising:

storing said data on said plurality of data storage units according to a redundant data storage method;

removing one of said plurality of data storage units for a period;

starting a delta log separate from said plurality of data storage units concurrent with said step of removing one of said plurality of data storage units;

changing a portion of said data on the remainder of said plurality of data storage units during the period when one of said plurality of data storage units is removed in accordance with the redundant data storage method;

storing a record of said changes in said delta log during the period when one of said plurality of data storage units is removed;

replacing said one of said plurality of data storage units; and

updating said one of said plurality of data storage units by updating those portions of data recorded in said delta log.

2. (original): The method of claim 1 wherein said redundant data storage method comprises RAID 1.

3. (original) The method of claim 1 wherein said redundant data storage method comprises RAID 3.

4. (original): The method of claim 1 wherein said redundant data storage method comprises RAID 5.

5. (original): The method of claim 1 wherein said redundant data storage method comprises remotely mirroring said data.

6. (original): The method of claim 1 wherein said one of said data storage units comprises a plurality of disk drives.

7. (original): The method of claim 1 wherein said delta file comprises pointers to said portion of said data that is changed.

8. (original): The method of claim 1 wherein said delta file comprises an updated version of said portion of said data that is changed.

9. (currently amended): A redundant data storage system capable of fast restoration of serviced data storage units comprising:

a plurality of data storage units;

a delta log separate from said plurality of data storage units; and

a controller that stores data on said plurality of data storage units according to a redundant data storage method, changes a portion of said data after taking one of said plurality of said data storage units off line for a period, stores a record of the changes in said delta log that are made to the remainder of the plurality of said data storage units during the period when one of said plurality of said data storage units is off line, brings said one of said plurality of said data storage units online, and updates said one of said plurality of said data storage units by updating those portions of data recorded in said delta file.

10. (original): The redundant data storage system of claim 9 wherein said redundant data storage method comprises RAID 1.

11. (original): The redundant data storage system of claim 9 wherein said redundant data storage method comprises RAID 3.

12. (original): The redundant data storage system of claim 9 wherein said redundant data storage method comprises RAID 5.

13. (original): The redundant data storage system of claim 9 wherein said redundant data storage method comprises remote mirroring.

14. (original): The redundant data storage system of claim 9 wherein said one of said data storage units comprises a plurality of disk drives.

15. (original): The redundant data storage system of claim 9 wherein said delta file comprises pointers to said portion of said data that is changed.

16. (original): The redundant data storage system of claim 9 wherein said delta file comprises an updated version of said portion of said data that is changed.

17. (previously presented): A redundant data storage system capable of fast restoration comprising:

a first means for storing data;

a second means that stores data on said first means according to a redundant data storage method, changes a portion of said data after taking one of said first means off line for a period, stores a record of the changes in a third means separate from said first means that are made to the remainder of the plurality of said first means during the period when one of said first means is off line, brings said one of said first means online, and updates said one of said first means by updating those portions of data recorded in said third means.

18. (original): The redundant data storage system of claim 17 wherein said redundant data storage method comprises RAID 1.

19. (original): The redundant data storage system of claim 17 wherein said redundant data storage method comprises RAID 3.

20. (original): The redundant data storage system of claim 17 wherein said redundant data storage method comprises RAID 5.

21. (original): The redundant data storage system of claim 17 wherein said redundant data storage method comprises remote mirroring.

22. (original): The redundant data storage system of claim 17 wherein said one of said first means comprises a plurality of disk drives.

23. (original): The redundant data storage system of claim 17 wherein said third means comprises pointers to said portion of said data that is changed.

24. (original): The redundant data storage system of claim 17 wherein said third means comprises an updated version of said portion of said data that is changed.